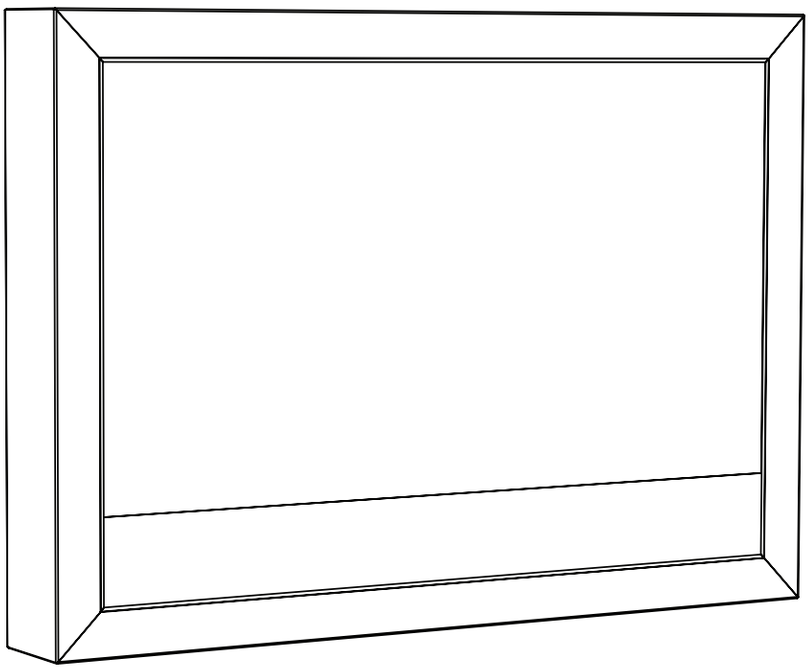
NEC



Quick Reference Guide

Kurzübersicht

Guía de referencia rápida

Guide abrégé de référence

Guida di riferimento rapida

MD461 0R

Manufacturer's Recycling Information

Disposing of your old NEC product

The aim of recycling is to gain an environmental benefit by means of re-use, upgrading, reconditioning or reclamation of material. Dedicated recycling sites ensure that environmentally harmful components are properly handled and securely disposed. To ensure the best recycling of our products, **NEC DISPLAY SOLUTIONS offers a variety of recycling procedures** and gives advice on how to handle the product in an environmentally sensitive way, once it has reached the end of its life.

All required information concerning the disposal of the product and country-specific information on recycling facilities can be found on our following websites:

http://www.nec-display-solutions.com/greencompany/ (in Europe).

WEEE Mark (European Directive 2002/96/EC)

Within the European Union

EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your NEC display products, please follow the guidance of your local authority, or ask the shop where you purchased the product, or if applicable, follow any agreements made between yourself and NEC.

The mark on electrical and electronic products only applies to the current European Union Member States.

Outside the European Union

If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.

Index

Important Information English-1
Warning, Caution.....English-1
Intended Use English-2
Recommended use English-3
Controls.....English-4
OSD (On-Screen-Display) English-6
Specifications English-8

Important Information

WARNING

TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE. ALSO, DO NOT USE THIS UNIT'S POLARIZED PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLETS UNLESS THE PRONGS CAN BE FULLY INSERTED.

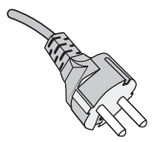
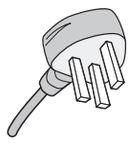
REFRAIN FROM OPENING THE CABINET AS THERE ARE HIGH VOLTAGE COMPONENTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION

TO REDUCE THE RISK OF ELECTRIC SHOCK, MAKE SURE POWER CORD IS UNPLUGGED FROM WALL SOCKET. TO FULLY DISENGAGE THE POWER TO THE UNIT, PLEASE DISCONNECT THE POWER CORD FROM THE AC OUTLET. DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Power Cord Important Information

CAUTION: Please use the power cord provided with this monitor in accordance with the table below. If a power cord is not supplied with this equipment, please contact your supplier. For all other cases, please use a power cord that matches the AC voltage of the power outlet and has been approved by and complies with the safety standard of your particular country.

Plug Type	European Continental	U.K.
Plug Shape		
Country	EU (except U.K.)	U.K.
Voltage	230	230

NOTE: This product can only be serviced in the country where it was purchased.

Declaration

Declaration of the Manufacturer

Means of Conformity

Device Classification: Class I, non-measuring function

Applicable Rules: Annex IX, Rules 1.4 (Section 1) and 1.1 (Section 3)

Product Name: MD461OR
46" Operating Room Solution

Model Number: MD461OR

UMDNS Code: 16-603

NEC Display Solutions Europe GmbH declares that the product listed is in conformity with the essential requirements and provisions of the Council Directive 93/42/EEC, including the amendments of the Council Directive 2007/47/EC, and conforms to the applicable clauses of the following standards:

CE
– EN 60601-1
– EN 60601-1-2
– EN 61000-3-2
– EN 61000-3-3

NEC Display Solutions Europe GmbH
Landshuter Allee 12-14. 80637 Muenchen, Germany

MD461OR Quick Reference Guide.indb 1 2/17/12 10:46:00 AM

Intended Use

The MD461OR Operating Room Solution is intended to be used for review of medical images by trained physicians. MD461OR cannot be used for a life-support system.

Safety Precaution

The unit is designed for exclusive interconnection with IEC60950 certified equipment outside of patient environment and IEC 60601-1 certified equipment inside the patient environment.

- Equipment connected to digital interfaces must comply with the respective IEC standards (e.g. IEC 60950 for data processing equipment and IEC 60601-1 for medical equipment).
- This device complies with EN60601-1-2. To minimize the interference from other equipment, a minimum 0.5 m distance shall be kept form other potential electromagnetic sources, such as a Cell Phone.
- To reduce the risk of electric shock, make sure the power cord is unplugged from the wall socket. To fully disengage the power to the unit, please disconnect the power cord from the ac outlet. Do not remove the front or back cover. No user serviceable parts inside. Refer servicing to qualified service personnel. The AC outlet shall be readily available and accessible.

European Customers

Unpacking, Installation and calibration of this monitor must only be done by authorized and trained personnel. Any installation done by a non-authorized person is done under his own risk and we accept no responsibility in any device malfunctioning.

NOTE: The **MultiSync P462 User's Manual**, is an integral part of this product. For all items exceeding the scope of this Quick Reference Guide, please refer to the **MultiSync P462 User's Manual**.

MD461OR Quick Reference Guide.indb 2 2/17/12 10:46:00 AM

Recommended use

English

Safety Precautions and Maintenance

FOR OPTIMUM PERFORMANCE, PLEASE
NOTE THE FOLLOWING WHEN SETTING UP
AND USING THE LCD MONITOR:

WARNING: Do not modify this equipment without authorization of the manufacturer.

WARNING: To disconnect this product from the mains supply disconnect the mains plug from the socket outlet.

- **DO NOT OPEN THE MONITOR.** There are no user serviceable parts inside and opening or removing covers may expose you to dangerous shock hazards or other risks. Refer all servicing to qualified service personnel.
- Do not spill any liquids into the cabinet or use your monitor near water.
- Do not place any heavy objects on the power cord. Damage to the cord may cause shock or fire.
- Do not place this product on a sloping or unstable cart, stand or table, as the monitor may fall, causing serious damage to the monitor.
- The power supply cord you use must have been approved by and comply with the safety standards of your country.
- In UK, use a BS-approved power cord with molded plug having a black (5A) fuse installed for use with this monitor.
- Do not place any objects onto the monitor and do not use the monitor outdoors.
- The lamps in this product contain mercury. Please dispose according to state, local or federal law.
- Do not bend power cord.
- Do not use monitor in high temperatured, humid, dusty, or oily areas.
- Temperature controlled fans are implemented in this monitor. For reliable performance and long useful life of this product, it is mandatory to not cover any vents on the monitor.
- Vibration can damage the backlight. Do not install where the monitor will be exposed to continual vibration.
- If monitor or LCD panel is broken, do not come in contact with the liquid crystal and handle with care.
- To prevent damage to the LCD monitor caused by tipping over due to earthquakes or other shocks, make sure to install the monitor in a stable location and take measures to prevent falling.
- Please do not touch patient and this medical device at the same time.

Immediately turn off the power, unplug your monitor from the wall outlet and move to a safe location then refer servicing to qualified service personnel under the following conditions. If the monitor is used in this condition, the monitor may cause fall, fire and electric shock:

- If the monitor has been wobbled.
- If the monitor has an unusual odor.
- When the power supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the cabinet.
- If the monitor has been exposed to rain or water.
- If the monitor has been dropped or the cabinet damaged.
- If the monitor does not operate normally by following operating instructions.

CAUTION

- Allow adequate ventilation around the monitor so that heat can properly dissipate. Do not block ventilated openings or place the monitor near a radiator or other heat sources. Do not put anything on top of monitor.
- The power cable connector is the primary means of detaching the system from the power supply. The monitor should be installed close to a power outlet which is easily accessible.
- Handle with care when transporting. Save packaging for transporting.
- Do not touch LCD panel surface while transporting, mounting and setting. Applying pressure on the LCD panel can cause permanent damage.

After turning off the MD461OR, it is recommended to let them “cool down” for approximately 2 minutes.
This minimizes the risk of blowing a fuse in the medical transformer or tripping the wall outlet circuit breaker.

Image Persistence: When a residual or “ghost” image of a previous image remains visible on the screen, this is called image persistence. Unlike CRT monitors, LCD monitors’ image persistence is not permanent, but constant images being displayed for a long period of time should be avoided.

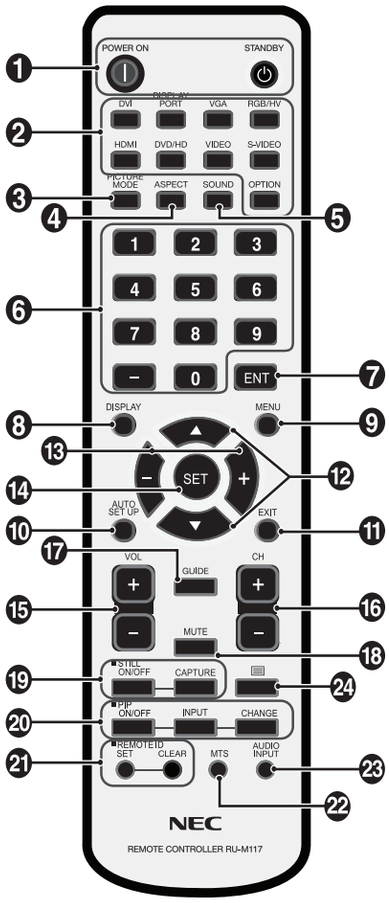
To alleviate image persistence, turn off the monitor for as long as the previous image was displayed. For example, if an image was on the monitor for one hour and a residual image remains, the monitor should be turned off for one hour to erase the image.

NOTE: As with all display devices, NEC DISPLAY SOLUTIONS recommends using a moving screen saver at regular intervals whenever the screen is idle or turning off the monitor when not in use.

MD461OR Quick Reference Guide.indb 3 2/17/12 10:46:00 AM

Controls (For further details, please refer to the **MultiSync P462 User's Manual**)

Wireless Remote Controller



❶ POWER button

Switches the power on/standby.

❷ INPUT button

Selects input signal.

DVI: DVI
DISPLAYPORT: DPORT
VGA: VGA
RGB/HV: RGB/HV
HDMI: HDMI
DVD/HD: DVD/HD, SCART
VIDEO: VIDEO1, VIDEO2
S-VIDEO: S-VIDEO
OPTION: Depends on your connection

❸ PICTURE MODE button

Selects picture mode, [HIGHBRIGHT], [STANDARD], [sRGB], [CINEMA], [AMBIENT1], [AMBIENT2].

HIGHBRIGHT: for moving images such as DVD.
STANDARD: for images.
sRGB: for text based images.
CINEMA: for movies.
AMBIENT1 and AMBIENT2: activate auto dimming function.

❹ ASPECT button

Selects picture aspect, [FULL], [WIDE], [DYNAMIC], [1:1], [ZOOM] and [NORMAL].

❺ SOUND button

Artificial surround sound for internal/external speakers.
Audio out is disabled when surround is set to ON.

❻ KEYPAD

Press buttons to set and change passwords, change channel and set REMOTE ID.

❼ ENT button*2

❽ DISPLAY button

Turns on/off the information OSD.

❾ MENU button

Turns on/off the menu mode.

❿ AUTO SETUP button

Enters auto setup menu.

⓫ EXIT button

Returns to previous menu within OSD menu.

⓬ UP/DOWN button

Acts as ▲▼ button to move the highlighted area up or down to select adjustment items within OSD menu.
Small screen which adjusted "PIP" mode moves up or down.

⓭ MINUS/PLUS (-/+) button

Increases or decreases the adjustment level within OSD menu settings.
Small screen which adjusted "PIP" mode moves left or right.

⓮ SET button

Makes selection.

⓯ VOLUME UP/DOWN button

Increases or decreases audio output level.

⓰ CH UP/DOWN button*2

⓱ GUIDE button*2

⓲ MUTE button

Turns on/off mute function.

⓳ STILL button

ON/OFF button: Activates/deactivates still picture mode.
STILL CAPTURE button: Captures still picture.

MD461OR Quick Reference Guide.indb 4 2/17/12 10:46:01 AM

⑳ PIP (Picture In Picture) button

ON/OFF button: Toggle switches between PIP, POP, PICTURE BY PICTURE-ASPECT and PICTURE BY PICTURE-FULL.
INPUT button: Selects the “picture in picture” input signal.
CHANGE button: Replaces to the main picture and sub picture.

		Sub picture									
		DVI	DPORT	VGA	RGB/HV	HDMI	DVD/HD	SCART	VIDEO1	VIDEO2	S-VIDEO
Main picture	DVI	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	DPORT	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	VGA	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes
	RGB/HV	Yes	Yes	No	No	Yes	No	No	Yes	No	Yes
	HDMI	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	DVD/HD	Yes	Yes	Yes	No	Yes	No	No	Yes	No	Yes
	SCART	Yes	Yes	Yes	No	Yes	No	No	No	No	No
	VIDEO1	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No
	VIDEO2	Yes	Yes	Yes	No	Yes	No	No	No	No	No
	S-VIDEO	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No

㉑ REMOTE ID button

Activates REMOTE ID function.

㉒ MTS button*2

㉓ AUDIO INPUT button

Selects audio input source [IN1], [IN2], [IN3], [HDMI], [OPTION]*1.

㉔ ☰ button

Activates closed captioning.
Note: VIDEO1, VIDEO2, S-VIDEO inputs only.

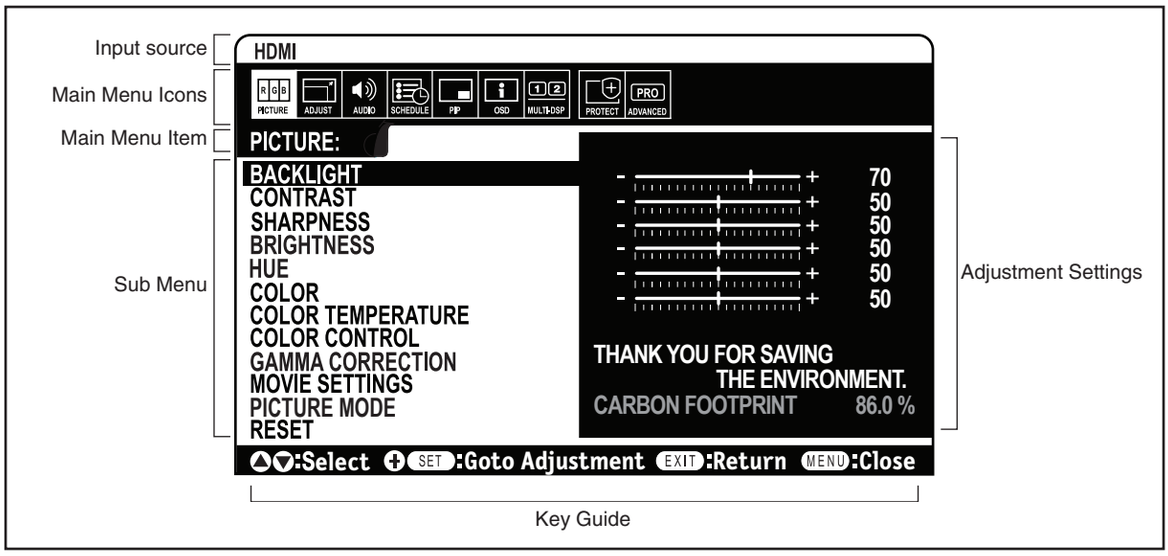
*1: The product you purchased may not have this feature.

*2: This button’s action depends on which option board you use. Refer to the option board’s manual for further information.

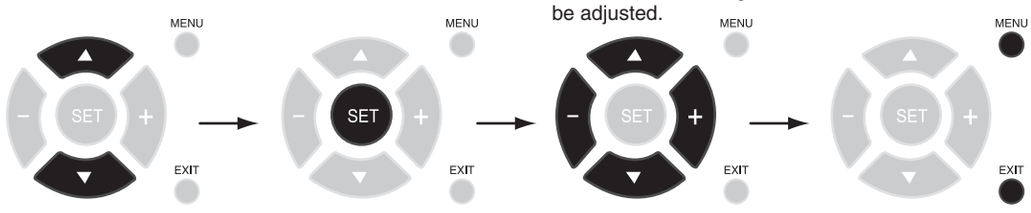
MD461OR Quick Reference Guide.indb 5 2/17/12 10:46:01 AM

OSD (On-Screen-Display) (For further details, please refer to the **MultiSync P462 User's Manual**)

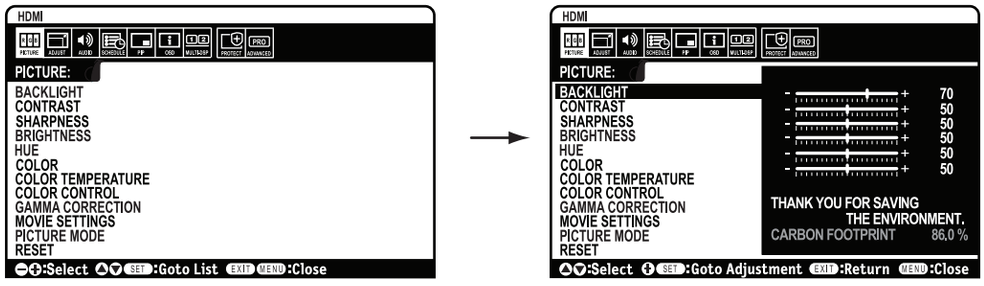
NOTE: Some functions may not be available depending on the model or optional equipment.



Remote Control


Press UP or DOWN button to select sub-menu.
Press SET.
Press UP or DOWN, PLUS or MINUS to select the function or setting to be adjusted.
Press MENU or EXIT.
MENU
SET
EXIT
Press UP or DOWN button to select.
Press INPUT button to decide.
Press UP or DOWN, PLUS or MINUS button to select.
Press EXIT

OSD screen



MD461OR Quick Reference Guide.indb 6 2/17/12 10:46:02 AM

Using Power Management

The LCD monitor follows the VESA approved DPM Display Power Management function.
The power management function is an energy saving function that automatically reduces the power consumption of the display when the keyboard or the mouse has not been used for a fixed period.
The power management feature on your new display has been set to the “ON” mode. This allows your display to enter a Power Saving Mode when no signal is applied. This could potentially increase the life and decrease the power consumption of the display.

NOTE: Depending on the PC and video card used, this function may not operate.

NOTE: It takes about 10 minutes for the monitor to go into power management mode when using DVD/HD, SCART, VIDEO1, VIDEO2 and S-VIDEO.

Selecting a video source

To view a video source:

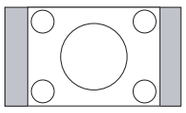
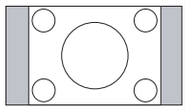
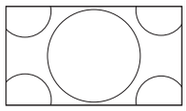
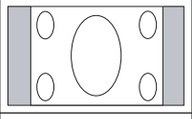
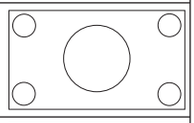
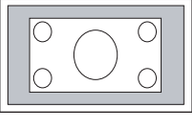
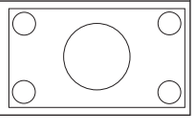
Use the input button to set [VIDEO1], [VIDEO2], [S-VIDEO].

Use the COLOR SYSTEM menu to set [AUTO], [NTSC], [PAL], [SECAM], [PAL60], [4.43NTSC], according to your video format.

Picture Aspect

DVI, VGA, RGB/HV, DPORT
FULL → 1:1 → ZOOM → NORMAL

HDMI, DVD/HD, SCART, VIDEO1, VIDEO2, S-VIDEO
FULL → WIDE → DYNAMIC → 1:1 → ZOOM → NORMAL

Aspect ratio of image	Unchanged view*3	Recommended selection for picture aspect*3
4:3		NORMAL 
		DYNAMIC 
Squeeze		FULL 
Letterbox		WIDE 

*3 Grey areas indicate unused portions of the screen.

NORMAL: Displays the aspect ratio the same as it is sent from the source.

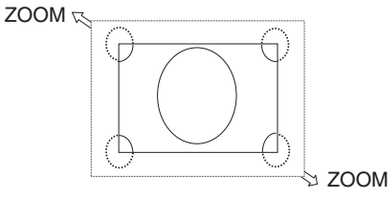
FULL: Fills entire screen.

WIDE: Expands a 16:9 letter box signal to fill entire screen.

DYNAMIC: Expands a 4:3 pictures to fill the entire screen with non-linearity. Some of the outside image area will be cut off due to expansion.

1:1: Display the image in a 1 by 1 pixel format.

ZOOM
The image can be expanded beyond the active display area. The image which is outside of active display area is not shown.



MD461OR Quick Reference Guide.indb 7 2/17/12 10:46:02 AM

Specifications

Product Specifications

LCD Module				46"/1168 mm diagonal Pixel Pitch: 0.530 mm Resolution: 1920 x 1080 Color: Over 16 million colors (depending on video card used) Brightness: 500 cd/m² (Factory setting Typ.) @25°C Contrast Ratio: 3500:1
Frequency				Horizontal: 15.625/15.734 kHz, 31.5 kHz - 91.1 kHz (Analog Input) 31.5 kHz - 91.1 kHz (Digital Input) Vertical: 50.0 - 85.0 Hz
Pixel Clock				25.2 MHz - 162.0 MHz
Viewable Size				1018.1 x 572.7 mm
Input Signal				
	DVI	DVI-D 24pin	Digital RGB	DVI (HDCP) VGA60, SVGA60, XGA60, WXGA60, SXGA60, UXGA60*1, 1920X1080 (60Hz), 1080p, 1080i
	DisplayPort	DisplayPort Connector	Digital RGB	DisplayPort Complies with Standard V1.1a, applicable to HDCP V1.3 VGA60, SVGA60, XGA60, WXGA60, SXGA60, UXGA60*1, 1920x1080 (60 Hz), 1080p, 720p
	VGA	15pin Mini D-sub	Analog RGB	0.7 Vp-p/75 ohm VGA60, SVGA60, XGA60, WXGA60, SXGA60, UXGA60*1, 1920X1080 (60Hz)
			Sync	Separate: TTL level (Pos./Neg.) Composite sync on Green Video: 0.3 Vp-p Neg.
	RGB/HV*2	BNC (R,G,B,H,V)	Analog RGB	0.7 Vp-p/75 ohm VGA60, SVGA60, XGA60, WXGA60, SXGA60, UXGA60*1, 1920X1080 (60Hz)
			Sync	Separate: TTL level (Pos./Neg.) Composite sync on Green Video: 0.3 Vp-p Neg.
	HDMI	HDMI Connector	Digital YUV Digital RGB	HDMI VGA60, SVGA60, XGA60, WXGA60, SXGA60, UXGA60*1, 1920x1080 (60 Hz), 1080p, 1080i, 720p@50Hz/60Hz, 576p@50Hz, 480p@60Hz, 576i@50Hz, 480i@60Hz
	DVD/HD*2	BNC X 3	Component	Y: 1.0 Vp-p/75ohm, Cb/Cr (Pb/Pr): 0.7 Vp-p/75 ohm HDTV/DVD: 1080p, 1080i, 720p@50Hz/60Hz, 576p@50Hz, 480p@60Hz, 576i@50Hz, 480i@60Hz
	VIDEO1 VIDEO2*2	BNC BNC	Composite	1.0 Vp-p/75 ohm NTSC/PAL/SECAM/4.43NTSC/PAL60
	S-VIDEO	Mini DIN 4 pin	S-VIDEO	Y: 1.0 Vp-p/75 ohm C: 0.286 Vp-p/75 ohm (NTSC), 0.3 Vp-p/75 ohm (PAL/SECAM) NTSC/PAL/SECAM/4.43NTSC/PAL60
Output Signal				
	DVI	DVI-D 24pin	Digital RGB	DVI (HDCP)
	DisplayPort	DisplayPort Connector	Digital RGB	DisplayPort Complies with Standard V1.1a, applicable to HDCP V1.3
	VIDEO1	BNC	Composite	1.0 Vp-p with 75 ohm terminated
AUDIO				
	AUDIO Input	RCA (L/R) STEREO Mini Jack X2	Analog Audio	Stereo L/R 0.5 Vrms
		HDMI Connector	Digital Audio	PCM 32, 44.1, 48 KHz (16/20/24bit)
	AUDIO Output	STEREO Mini Jack	Analog Audio	Stereo L/R 0.5 Vrms
Speaker Output				Internal Speaker 10W + 10W
Control				RS-232C In: 9 Pin D-sub RS-232C Out: 9 Pin D-sub (with daisy chain) LAN: RJ-45 10/100 BASE-T Remote IN: Stereo Mini jack 3.5 Φ Remote OUT: Stereo Mini jack 3.5 Φ
Power Supply				1.25 A @ 240V AC, 50/60Hz
Operational Environment				Temperature: 5 - 30°C / 41 - 86°F (Default brightness) Humidity: 20 - 80% (without condensation)
Storage Environment				Temperature: -20 - 60°C / -4 - 140°F Humidity: 10 - 90% (without condensation) / 90% - 3.5% x (Temp - 40°C) regarding over 40°C
Dimension				1153 (W) x 820 (H) x 180 (D) mm / 45.4 (W) x 32.3 (H) x 7.1 (D) inches
Weight				Ca. 65 kg (143.3 lbs)
Power Management				VESA DPM
Plug & Play				VESA DDC2B, DDC/CI, DisplayPort
IP Grade				IP55 Front Side / IP21 Overall

NOTE: Technical specifications are subject to change without notice. *1: Compressed image *2: Common terminal

MD461OR Quick Reference Guide.indb 8 2/17/12 10:46:03 AM

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